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EXAMINER	
NGUYEN, PHUOC H	

ART UNIT	PAPER NUMBER
2143	13

DATE MAILED: 05/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/540,731	EBERLE ET AL.	
	Examiner	Art Unit	
	Phuoc H. Nguyen	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7* is/are allowed.

6)☒ Claim(s) *1-5,8-19,22-24,27,and 30-37* is/are rejected.

7)☐ Claim(s) *6,20,21,25,26,28 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to the applicants Amendment filed on March 18, 2004, (Paper No. 12). Previous office action contained claims 1-36. Applicant amended claims 1,3,6,7,18,19,20, and 31 have been amended, and added claim 37. Claims 1-37 are presented for further consideration and examination

Response to Arguments

2. Applicants' arguments have been fully considered but they are not persuasive. Applicants argued that Grant et al. U.S. Patent 5,218,602 fails to teach or suggest that for a particular transfer, the arbitration logic is couple to receive an indication from a particular target node for the particular transfer as to whether the particular transfer can be supported in the particular target node. This is not found persuasive. Grant teaches for a particular transfer, the arbitration logic is couple to receive an indication from a particular target node for the particular transfer as to whether the particular transfer can be supported in the particular target node (col. 10, last paragraph through col. 11, 1st paragraph). Grant invention teach the arbitration stage (eg. path establish phase between the RB's 90 and CC 98), and Grant further disclose at which rate the CC 98 can accept from RB's 90 (see col. 10, last paragraph).

3. Claim 7 is allowed.

4. Claims 2-6,8-17,19-30, and 32-36, is rejected at least by virtual of their dependency on independent and by other reasons set forth in the previous office action [see Paper No. 11].

5. According, rejections for claims 1-20 are presented as below.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-5,8-16,31,32,35, and 36-37 rejected under 35 U.S.C. 102(b) as being anticipated by Grant et. al. U.S. Patent 5,218,602.

2. Referring to claim 1, Grant reference disclose a plurality of initiator nodes coupled to send packets, into the network, and a plurality of target nodes coupled to receive packets sent into the network (Grant - Abstract); and a plurality of pipeline stages for transmitting data across the network (Grant – col. 5, lines 34-35), each pipeline stage consuming a predetermined time period, thereby providing for a predetermined time period for transmission for each packet successfully sent between one of the initiator nodes and one of the target nodes ((Grant - Abstract; col. 5, lines 36-47; and col.. 5, lines 62-65), the pipelined stages including an arbitration stage ((Grant – service request phase) col. 5, lines 36-41), arbitration logic coupled to the initiator nodes, the pipelined network, and the target nodes, wherein for a particular transfer, the arbitration logic is couple to receive an indication from a particular target node for the

particular transfer as to whether the particular transfer can be supported in the particular target node (col. 10, last paragraph through col. 11, 1st paragraph).

3. Referring to claim 2, Grant reference disclose the pipelined network is synchronous in that boundaries of all the pipeline stages are aligned (Grant – col. 5, lines 62-65; col. 8, last paragraph through col. 9, 1st paragraph; and col. 10, lines 7-15).

4. Referring to claim 3, Grant reference disclose the pipeline stages include a transfer stage (Grant – service request phase) col. 5, lines 36-41), and an acknowledge stage (Grant – (release acknowledge phase) col. 5, lines 50-54), the stages being in a fixed time relation to each other (col. 5, last paragraph through col. 6, 1st paragraph).

5. Referring to claim 4, Grant reference disclose the pipeline stages having equal length (Grant – (synchronous: fixed interval) col. 5, lines 63-64).

6. Referring to claim 5, Grant reference disclose a check stage in which an initiator node checks if transmission of a sent packet was successful (Grant – col. 5, last paragraph through col. 6, 1st paragraph).

7. Referring to claim 8, Grant reference disclose during the transfer stage the packet supplied by the initiator traverses the network (Grant – col. 5, lines 22-49).

8. Referring to claim 9, Grant reference disclose during the acknowledge stage, an acknowledge packet is returned by the target node to the initiator node (col. 5, last paragraph through col. 6, 1st paragraph).

9. Referring to claim 10, Grant reference disclose the acknowledge packet is checked by the initiator during the check stage (col. 5, last paragraph through col. 6, 1st paragraph).

10. Referring to claim 11, Grant reference disclose the check stage is fixed in time in relation to the arbitration stage, thereby allowing the initiator node to check for successful completion of sending the packet a fixed time after the arbitration stage (Grant - col. 5, lines 42-49; and col. 6, lines 15-20).

11. Referring to claim 12, Grant reference disclose the transfer stage includes multiple pipeline stages to transmit the transfer packet across the network (Grant – lines 36-41).

12. Referring to claim 13, Grant reference discloses the acknowledge stage includes multiple stages to transmit the acknowledge packet across the network (Grant - col. 6, lines 15-20).

13. Referring to claim 14, Grant reference discloses the number of bytes transferred per request during the transfer stage is fixed (Grant – (synchronous: fixed interval) col. 5, lines 63-64).

14. Referring to claim 15, Grant reference disclose outstanding transactions across the pipelined network are delivered in order (Grant – col. 10, lines 30-37).

15. Referring to claim 16, Grant reference discloses a switch coupling the nodes on the pipelined network (Grant – col. 14, lines 20-25).

16. Referring to claim 31, Grant reference discloses a plurality of processing nodes, each processing node including at least one processor, and a synchronous pipelined switched network coupling the plurality of processing nodes, the pipelined network having a plurality of pipeline stages, the pipeline including at least an arbitration stage to obtain a path through the pipelined switched network (Grant – (path establish phase) col. 5, lines 42-49), a transfer stage transferring data over the path ((Grant – service request phase) col. 5, lines 36-41) and an acknowledge stage (Grant – (release acknowledge phase) col. 5, lines 50-54), each stage being of equal length

(Grant – (synchronous: fixed interval)), (Grant – Abstract; col. 5, lines 25 through col. 6, lines 10; col. 13, lines 20-36; and col. 5, lines 63-64); wherein during the arbitration stage, arbitration logic communicates with a target node to determine if the target node can accept a packet from an initiator node (col. 10, last paragraph through col. 11, 1st paragraph).

17. Referring to claim 32, Grant reference discloses the pipelined switched network comprises a first switching circuit coupling the plurality of processing nodes, the first switching circuit carrying information transmitted during the transfer stage (Grant – col. 14, lines 21-25).

18. Referring to claim 35, Grant reference discloses the networked computer system further includes at least one storage node coupled to the plurality of processing nodes through the synchronous pipelined switched network (Grant – col. 9, lines 26-37).

19. Referring to claim 36, Grant reference discloses the networked computer system further includes at least an input/output node coupled to the plurality of processing nodes through the synchronous pipelined switched network (Grant – Abstract; Figures 1, and 2).

20. Referring to claims 37, Grant reference disclose transmitting information from an initiator node to a target node using a plurality of pipeline stages (Grant – col. 5, lines 34-35); requesting a path through the network from the initiator node to the target node during an individual one of the pipeline stages, and communicating with the target node during an individual one of the pipeline stages to determine if the target node can accept a packet from the initiator node (col. 5, lines 34-54; and col. 10 last paragraph through col. 11, 1st paragraph).

Claim Rejections - 35 USC § 103

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

22. Claims 17,33, and 34 rejected under 35 U.S.C. 103(a) as being unpatentable over Grant in view of Lam et al. U.S. Patent 6,553,027.

Grant reference discloses a switch coupling the nodes on the pipelined network; however, Grant reference fail to disclose network comprises a plurality of cascaded switches.

Lam reference disclose network comprises a plurality of cascaded switches (Lam – Figure 5).

It would have been obvious to one of the ordinary skill in the art at the time of the invention was made to incorporate to apply cascaded switches of Lam's teaching into Grant's system to effectively form a single network switch increased number of ports.

23. Referring to claim 33, Grant disclose the invention substantially as claimed as described above; however, Grant reference fail to disclose discloses the pipelined switched network comprises a second switching circuit coupling the processing nodes, the second switching circuit being independent of the first switching circuit and wherein at least a portion of pipeline operations are carried over the second switching circuit simultaneous with operations for the transfer stage carried over the first switching circuit

Lam reference disclose network comprises a plurality of cascaded switches in which the information for at least a portion of pipeline operations are carried over the second switching circuit simultaneously with operations for the transfer stage carried over the first switching circuit (Lam – Figures 5, and 6; Abstract; and col. 11, lines 49-55).

It would have been obvious to one of the ordinary skill in the art at the time of the invention was made to incorporate Lam's teaching into Grant's system to use the cascaded switches to transmit a portion of operations are carried over the second switching circuit to allows the transferred data between network switches to occur much faster than over a shared medium.

24. Referring to claim 34, Grant reference disclose a pipeline network with contain three phases is require to complete transfer from an originator nodes to a destination nodes. As previous explain claim 33 the pipeline operations are carried over the second switching circuit simultaneously with operations for the transfer stage carried over the first switching circuit. And due to the invention of Grant is pipelining; therefore, the information for the arbitration and acknowledge stages are also applied to the carried over operation between the first and second switching circuit, which allows the transferred data between network switches to occur much faster than over shared medium.

25. Claims 18,19,22,27, and 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Grant in view of 31-36 rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar U.S. Patent 6,122,274.

26. Referring to claim 18, Grant reference disclose transmitting the information from an initiator node to a target node using a plurality of pipeline stages in the computer network, each

pipeline stage having a fixed forwarding delay (Grant - Abstract; col. 5, lines 36-47; and col..5, lines 62-65); and requesting a path through the network from the initiator node to the target node during an arbitration stage((Grant – service request phase) col. 5, lines 36-41) from arbitration logic, the arbitration logic communicating with the target node to determine if the target node can accept a packet from the initiator node (col. 10, last paragraph through col. 11, 1st paragraph); however, Grant reference fails to disclose that overlapping an operation in one pipeline stage with another operation in another pipeline stage.

Kumar reference discloses the overlapping an operation in one pipeline stage with another operation in another pipeline stage (Kumar – Figure 9, for example at pipeline cycle t=3, stage 1, 2, and 3 are overlapped each others).

It would have been obvious to one of the ordinary skill in the art at the time of the invention was made to incorporate overlapping feature of Kumar's teaching into Grant's method to use the overlapping technique to enhance parallelism as the pipeline stages fill up with multiple tasks, and hence a speed up in throughput is achieved by the disclosed switching method.

27. Referring to claim 19, Grant reference disclose sending at least one data packet containing the information from the initiator node to the target node during one or more transfer stages (Grant – service request phase), and sending an acknowledge packet containing status of receipt of the data packet from the target to the initiator during one or more acknowledge pipeline stages (Grant – release acknowledge phase) (Grant – col. 5, lines 33-54).

28. Referring to claim 22, Grant reference disclose the pipelined network includes a first switching circuit coupling the initiator node and the target node, the first switching circuit carrying information transmitted during the transfer stage (Grant – col. 14, lines 21-25).

29. Referring to claim 27, Grant reference discloses the initiator node checking the acknowledge packet a fixed number of pipeline stages after sending the transfer packet, to determine whether transmission of the information was successful (Grant - col. 5, lines 42-49; and col. 6, lines 15-20).

30. Referring to claim 30, Grant reference disclose sending all information across the network in order (Grant – col. 10, lines 30-37)

31. Claims 23, and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Grant and Kumar as applied to claims 18,19, and 22 above, and further in view of Lam U.S. Patent 6,553,027.

32. Referring to claim 23, Grant and Kumar disclose the invention substantially as claimed as described; however, Grant and Kumar reference fail to disclose network includes a second switching circuit coupling the initiator node and the target node, the second switching circuit being independent of the first switching circuit and wherein information for at least a portion of pipeline operations are carried over the second switching circuit simultaneously with operations for the transfer stage carried over the first switching circuit.

Lam reference disclose network comprises a plurality of cascaded switches in which the information for at least a portion of pipeline operations are carried over the second switching circuit simultaneously with operations for the transfer stage carried over the first switching circuit (Lam – Figures 5, and 6; Abstract; and col. 11, lines 49-55).

It would have been obvious to one of the ordinary skill in the art at the time of the invention was made to incorporate Lam's teaching into Grant's and Kumar's system to use the cascaded switches to transmit a portion of operations are carried over the second switching circuit to allows the transferred data between network switches to occur much faster than over a shared medium.

33. Referring to claim 24, due to Grant reference disclose a pipeline network with contain three phases is require to complete transfer from an originator nodes to a destination nodes. As previous explain claim 23 the pipeline operations are carried over the second switching circuit simultaneously with operations for the transfer stage carried over the first switching circuit. And due to the invention of Grant is pipelining; therefore, the information for the arbitration and acknowledge stages are also applied to the carried over operation between the first and second switching circuit, which allows the transferred data between network switches to occur much faster than over shared medium.

Allowable Subject Matter

34. Claim 7 is allowed.

35. Claims 6,20,21,25,26,28, and 29 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Haney et al. U.S. Patent 5,467,211

Cidon et al. U.S. Patent 5,684,961

Alleyne et al. U.S. Patent 6,345,050

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuoc H. Nguyen whose telephone number is 703-305-5315. The examiner can normally be reached on Mon -Thu (7AM-4:30PM) and off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Wiley can be reached on 703-308-5221. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Phuoc H. Nguyen
Examiner
Art Unit 2143

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May 19, 2004

DAVID WILEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100